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# Lichens from Peary Land, North Greenland

Eric Steen Hansen

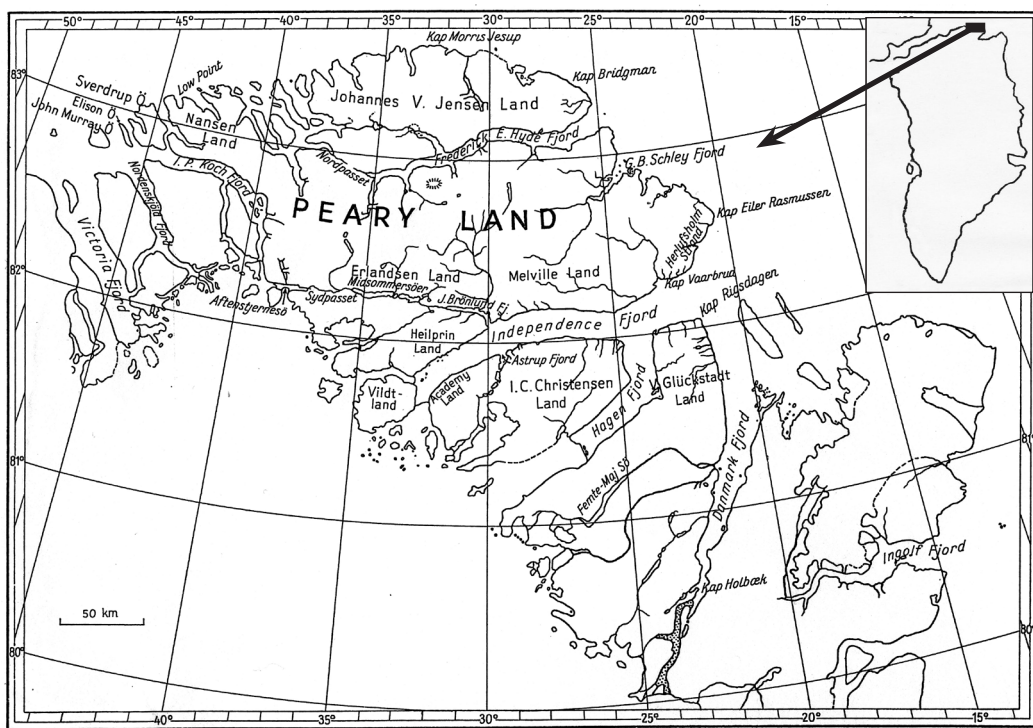
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**Abstract:** A total of 81 taxa of lichens are reported from Peary Land and adjacent areas in North Greenland. Six taxa are new to Peary Land.

## INTRODUCTION

The exploration of the lichen flora of the northernmost arctic land area in the world, Peary Land, does not date far back in time. The Swedish botanist, Thorild Wulff collected 64 lichen taxa in this region in June 1917 during "The Second Thule Expedition". He died from exhaustion during the sledge-journey, but his collections were saved (Lyngé, 1923). "The Danish Peary Land Expedition 1947–50" was the next expedition to visit the region. An extensive material of lichens were collected by B. Fristrup, K. Holmen, P.

Johnsen, E. Knuth, K. Ellitsgaard Rasmussen and J. Troelsen. Holmen spent four summers and one winter in Peary Land. I wish to dedicate the present paper to my former teacher in glaciology, Børge Fristrup, and my former teacher in bryology and arctic botany, Kjeld Holmen. Apart from an incomplete list of lichens without precise indication of localities (Dietz & Andersen, 1984), this important lichen material from the middle of the 19th century has remained unpublished until now. The vascular plants and



**Fig. 1.** Location of the two investigation areas in North Greenland.

the mosses of Peary Land were published by Holmen (1957, 1960). The author collected 88 taxa of lichens at Jørgen Brønlund Fjord in June and July 1988 (Hansen, 1995a & b). In July and August 2007 he collected 165 taxa of lichens in Johannes V. Jensen Land at the north coast of Greenland (Hansen, 2009). The British physician, R. Corner, visited northern Peary Land in June and July 1995 and collected 41 species of lichens (Hansen, 2008). Some rare species have recently been reported from Peary Land, for example, *Cladonia libifera* Savicz (Hansen & Ahti, 2011), *C. galindezii* Øvstedal (Hansen, 2013) and *Buellia mogensenii* E.S. Hansen & Tønsberg (Hansen, 2012). Bay (1992) has outlined the previous botanical work in Peary Land with particular emphasis on the vascular plants.

### Geology and climate

Peary Land is located in northernmost Greenland (Fig. 1). It is part of the Greenland National Park in northern and eastern Greenland and is composed entirely of Palaeozoic sedimentary rocks such as sandstone, limestone, dolomite and slate (Peel & Sønderholm, 1991). These rocks are intruded by basaltic rocks. The landscape in the southern part of Peary Land consists of extensive mountain plateaus reaching up to 1000 m a.s.l. intersected by wide valleys. In most places the soil is neutral to alkaline with pH values between 6 and 8 (Holmen, 1957). Soil polygons and tussocks with specific lichen zones are common, where much snow is deposited during winter.

Apart from the coastal area Peary land has a high arctic, continental climate (Jensen, 1999). The mean temperature is above 0 °C in the three summer months, June, July and August (Bay, 1992; Hansen, 1995a). The mean temperature of July is c. 5 °C, while the mean temperature of the coldest months often reaches below -30 °C. The annual number of hours with sunshine is about 2000. The annual precipitation is extremely low, up to c. 100 mm, only. Most of it falls as snow, even during summer. About 60 days are without frost.

Peary Land is a true polar desert with extensive totally bare areas and fell-fields with scattered lichen vegetation. The vegetation of higher plants is restricted to the surroundings of watercourses and snow-patches. Heath patches with *Cassiope tetragona* occur in areas with

accumulation of snow, while steppe-like areas with *Kobresia myosuroides*, *Carex rupestris* and *Carex nardina* are most commonly found on dry soil with a thin layer of snow during winter. *Saxifraga oppositifolia* occurs in many types of communities and is common even on bare soil (Holmen, 1957). Lichens occur more or less abundantly in these plant communities and in meadows as well. The rocks and erratic boulders support a characteristic epilithic lichen vegetation with Umbilicarias, Xanthorias etc. Nitrophilous and calciphilous lichens are fairly well represented in Peary Land (Hansen, 1995).

### MATERIAL AND METHODS

The lichen material consists of 200 specimens and has mainly been collected in the period 1947–1949 at numerous localities in Peary Land. The coordinates of the localities are given in the list of species. The greater part of the material has been collected by K. Holmen, but B. Fristrup, P. Johnsen, E. Knuth, K. Ellitsgaard Rasmussen and J. Troelsen have also contributed with collections. A few specimens have been collected in Kronprins Christian Land (Station Nord). The whole material was studied with Zeiss light microscopes and identified by the author. It is deposited at the Botanical Museum, University of Copenhagen (C).

### RESULTS

#### List of species

Abbreviations and symbols: \* – the taxon is new to the lichen flora of Peary Land; collectors: BF – B. Fristrup, KH – K. Holmen, PJ – P. Johnsen, EK – E. Knuth, KER – K. Ellitsgaard Rasmussen, JT – J. Troelsen. Nomenclature follows Santesson et al. (2004). A detailed map of the visited localities can be found in Holmen (1957).

ARCTOCETRARIA NIGRICASCENS (Nyl.) Kärnefelt & Thell – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on stony soil at river bed, together with *Cetraria islandica*, 12.05. & 14.05.1949, leg. KH.

ASPICILIA CONTORTA (Hoffm.) Kremp. – Falkefjeld, 82°11'N, 28°00'W, alt. 130 m, on manured, siliceous rock, 26.04.1949, leg. KH.

BRODOA OROARCTICA (Krog) Goward – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on

- boulder on stony plain, together with *Bryoria chalybeiformis* and *Pseudephebe minuscula*, 13.05. & 14.05.1949, leg. KH; Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on siliceous stone on plain, 23.05.1949, leg. JT.
- BRYOCAULON DIVERGENS** (Ach.) Kärnefelt – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil and mosses, together with *Cetraria islandica*, *Dactylina ramulosa*, *Per tusaria coriacea* and *Thamnolia vermicularis*, 12.05.1949, leg. KH.
- BRYORIA CHALYBEIFORMIS** (L.) Brodo & D. Hawksw. – Kap Glacier, 81°48'N, 31°45'W, alt. 100 m, on soil in fell-field, 7.06.1949, leg. KH; Blomsterstranden, 82°04'N, 31°00'W, alt. 25 m, on soil in fell-field, together with *Gowardia nigricans*, 20.05.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 1000 m, on soil in stone field, 27.06.1949, leg. BF; Herlufsholm Strand, 82°40'N, 21°30'W, on boulder, 13.05.1949, leg. KH & on soil in fell-field, together with *Gowardia nigricans*, 14.05.1949, leg. KH; Head of Hellefiskefjord, 82°45'N, 23°00'N, alt. 250 m, on soil, together with *Thamnolia vermicularis*, 28.05.1949, leg. JT.
- BUELLIA PAPILLATA** (Sommerf.) Tuck. – Blomsterstranden, 82°04'N, 31°00'W, alt. 25 m, on plant remains and mosses in fell-field, together with *Rinodina turfacea*, 20.05.1949, leg. KH; 82°07'N, 31°15'W, alt. 250 m, on soil at river bed, 05.06.1951, leg. KH.
- CALOPLACA TIROLIENSIS** Zahlbr. – Saxifragadal, 81°51'N, 31°15'W, on plant remains, together with *Lecanora epibryon*, 29.10.1948, leg. KH; Koralkysten, 82°15'N, 29°30'W, alt. 20 m, on mosses on gravelly coastal plain, together with *Lecanora epibryon* and *Physconia muscigena*, 25.04.1949, leg. KH.
- CANDELARIELLA CANADENSIS** H. Magn. – Saxifragadal, 81°51'N, 31°15'W, alt. 15 m, on mineral soil, 7.06.1949 & on plant remains, together with *Psora rubiformis*, 29.10.1948, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 700 m, on mineral soil in *Cassiope tetragona* heath on slope, 17.06.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil on stony plain & alt. 150 m, on soil on E-facing slope, 13.05. 1949, leg. KH.
- CANDELARIELLA VITELLINA** (Hoffm.) Müll. Arg. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on siliceous stone in fell-field, 14.05.1949, leg. KH.
- CETRARIA ISLANDICA** (L.) Ach. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil in fell-fields, 12.05. & 14.05.1949, leg. KH.
- CETRARIA MURICATA** (Ach.) Eckfeldt – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil in stony fell-field, together with *Flavocetraria cucullata*, 14.05.1949, leg. KH.
- CETRARIELLA DELISEI** (Bory ex Schaer.) Kärnefelt & Thell – Saxifragadal, 81°51'N, 31°15'W, on soil, 29.10.1948, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil at stony river bed, together with *Dactylina ramulosa*, 12.05. & 14.05.1949, leg. KH.
- CLADONIA BOREALIS** S. Stenroos – Kap Glacier, 81°48'N, 31°45'W, alt. 1 m, among mosses in meadow, together with *Psoroma tenue*, 07.06.1949, leg. KH; Saxifragadal, 81°51'N, 31°15'W, alt. 150 m, on soil, 07.06.1949, leg. KH.
- \* **CLADONIA MACROCERAS** (Delise) Hav. – Head of Hellefiskefjord, 82°45'N, 23°00'W, alt. 250 m, among mosses on soil, 28.05.1949, leg. JT. – *C. macroceras* belongs to the *Cladonia gracilis* group. It is relatively common in Greenland, where it has a preference for areas with neutral to alkaline soils (Ahti, 1980; Hansen, 1982).
- CLADONIA POCILLUM** (Ach.) Grognot – Saxifragadal, 81°51'N, 31°15'W, on soil rich in humus, 29.10.1948, leg. KH; Blomsterstranden, 82°04'N, 31°00'W, alt. 25 m, on soil in fell-field, 20.05.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 460 m, on soil in fell-field, together with *Physconia muscigena*, 8.07.1949, leg. KH; Kap Vårbrud, 82°18'N, 22°30'W, alt. 10 m, on soil rich in humus, together with *Physconia muscigena*, 04.05.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 20 m, on soil in crevice & alt. 75 m, on soil in boulder field, 12.05.1949, leg. KH; Jewell Fjord, 83°06'N, 42°30'W, on soil rich in humus, together with *Rinodina archaea*, 15.04.1950, leg. KER. – Contrary to *Cladonia pyxidata*, *C. pocillum* is restricted to calcareous substrata (Galloway, 2007).
- CLADONIA PYXIDATA** (L.) Hoffm. – Saxifragadal, 81°51'N, 31°15'W, alt. 15 m, on soil in stony fell-field, 07.06.1949, leg. KH; Blomsterstranden, 82°04'N, 31°00'W, alt. 25 m, on soil in stony fell-field, 20.05.1949, leg. KH; Jewell Fjord, 83°06'N, 42°30'W, on soil, 15.04.1950, leg. KER.

- COLLEMA SUBSTELLATUM H. Magn. – Falkefjeld, 82°11'N, 28°00'W, alt. 130 m, on soil at the base of bird rock, 26.04.1949; Kap Vårbrud, 82°18'N, 22°30'W, alt. 40 m, on soil in depression in clayey coast plain, 04.05.1949, leg. KH.
- COLLEMA UNDULATUM Laurer ex Flot. var. GRANULOSUM Degel. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 10 m, on solifluction soil, 06.05.1949, leg. KH.
- DACTYLINA RAMULOSA (Hook.) Tuck. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, among mosses in stony fell-field, together with *Bryocaulon divergens*, *Cetraria islandica*, *Flavocetraria cucullata*, *Pertusaria coriacea* and *Thamnia vermicularis*, 12.05. & 14.05.1949, leg. KH.
- DIMELAENA OREINA (Ach.) Norman – Krognæs, 81°55'N, 29°30'W, alt. 10 m, on glaciated basaltic boulder, 27.10.1948, leg. KH.
- FLAVOCETRARIA CUCULLATA (Bellardi) Kärnefelt & Thell – Station Nord, 81°36'N, 16°40'W, on soil, 17.07.1952, leg. EK; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil in stony fell-field, 12.05. & 14.05.1949, leg. KH.
- FLAVOCETRARIA NIVALIS (L.) Kärnefelt & Thell – Station Nord, 81°36'N, 16°40'W, on soil, 17.07.1952, leg. EK; Kap Glacier, 81°50'N, 32°30'W, alt. 100 m, on soil in stony fell-field, 07.06.1949, leg. KH; Saxifragadal, 81°51'N, 31°15'W, alt. ca. 20 m, in stony fell-field, 07.06.1949, leg. KH; Krognæs, 81°55'N, 29°30'W, alt. 100 m, on soil in fell-field, 09.06.1949, leg. PJ; Slebsager Elv, 82°00'N, 25°30'W, alt. 20 m, on stony soil, together with *Dryas* sp., 19.05.1949, leg. KH; Blomsterstranden, 82°04'N, 31°00'W, alt. 25 m, on soil in stony fell-field, together with *Gowardia nigricans*, 20.05.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 1050 m, on soil on stony plateau, 17.06.1949 & alt. 1000 m, on soil in fell-field, 26.06.1949, leg. BF; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 15 m, on soil on gravelly hill, 07.05.1949 & alt. 20 m, on soil in crevice, 12.05.1949 & alt. 75 m, on soil in stony fell-field, 14.05.1949, leg. KH; Head of Hellefiskefjord, 82°45'N, 23°00'W, alt. 250 m, on soil, 28.05.1949, leg. JT; Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on soil on stony plain, 23.05.1949, leg. JT.
- GOWARDIA NIGRICANS (Ach.) P. Halonen, L. Myllus, S. Velmela & H. Hyvärinen – Saxifragadal, 81°51'N, 31°15'W, alt. c. 20 m, on soil in stony fell-field, 07.06.1949, leg. KH; Blomsterstranden, 82°04'N, 31°00'W, alt. 25 m, on soil in stony fell-field, 20.05.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 1000 m, on soil in fell-field, 26.06.1949, leg. BF; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil in stony fell-field, 14.05.1949, leg. KH; Sverdrup Island, Mascart Inlet, 82°54'N, 44°50'W, on soil, 28.04.1950, leg. KER; G. B. Schley Fjord, 83°00'N, 24°30'W, on soil in river delta, alt. 2 m, 23.05.1949, leg. JT.
- HYPOGYMNIA SUBOBSCURA (Vain.) Poelt – Blomsterstranden, 82°04'N, 31°00'W, alt. 25 m, on soil in stony fell-field, 20.05.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil on stony plain, together with *Lecidella wulfenii* and *Physconia muscigena*, 13.05.1949, leg. KH. – *H. subobscura* is easily distinguished from *H. austerodes* by absence of soredia and more or less abundant lobules (Hansen & McCune, 2010). Contrary to *H. austerodes*, *H. subobscura* has a distinct preference for neutral to alkaline substrates.
- LECANORA ATROMARGINATA (H. Magn.) Hertel & Rambold – Kap Eiler Rasmussen, 82°35'N, 20°30'W, alt. 15 m, on basaltic stone on gravelly hill, together with *Lecidea tesse-lata*, *Rhizocarpon disporum*, and *Xanthoria elegans*, 07.05.1949, leg. KH.
- LECANORA EPIBRYON (Ach.) Ach. – Prinsesse Dagmar Ø, 81°42'N, 18°00'W, on soil, 07.05.1952, leg. EK; Kap Glacier, 81°48'N, 31°45'W, on mosses, 29.10.1948, leg. KH; Saxifragadal, 81°51'N, 31°15'W, on plant remains, 29.10.1948, leg. KH; Slebsager Elv, 82°00'N, 25°30'W, alt. 5 m, on plant remains at river bed and on mosses in stony area, together with *Dryas* sp., and on mosses in stony area together with *Carex misandra*, 19.05.1949, leg. KH; Neergård Elv, 82°08'N, 27°10'W, alt. 50 m, on plant remains on stony terrace, 19.05.1949, leg. KH; Koralkysten, 82°10'N, 29°00'W, alt. 20 m, on mosses on gravelly coast plain, 25.04.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 400 m, on mosses, together with *Saxifraga nivalis*, 07.08.1949, leg. KH; Graptolit Elv, 82°14'N, 24°00'W, alt. 120 m,



- on plant remains, together with *Megaspora verrucosa*, 01.05.1949, leg. KH; Merqujog, 82°38'N, 39°30'W, alt. 200 m, on soil, 31.03.1949, leg. PJ; Head of Hellefiskefjord, 82°52'N, 23°00'W, alt. 170 m, on plant remains in crevice in rock, 27.05.1949, leg. PJ.
- LECANORA GEOPHILA (Th. Fr.) Poelt – Kap Glacier, 81°50'N, 32°30'W, alt. 10 m, on sandy soil, together with *Psora rubiformis*, 07.06.1949, leg. KH.
- LECANORA MARGINATA (Schaer.) Hertel & Rambold – Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on basaltic stone on stony plain, together with *Pseudephebe minuscula* and *Sporastatia testudinea*, 23.05.1949, leg. JT.
- LECIDEA TESSELATA Flörke – Kap Eiler Rasmussen, 82°35'N, 20°30'W, alt. 15 m, on basaltic stone on gravelly hill, 07.05.1948, leg. KH.
- LECIDELLA BULLATA Körb. – Sydpasset, 82°17'N, 36°00'W, on calcareous stone, 21.03.1949, leg. PJ; Graptolit Elv, 82°19'N, 24°30'W, alt. 100 m, on stone composed of dolomite on stony slope, together with *Xanthoria elegans*, 01.05.1949, leg. KH; Kap Vårbrud, 82°20'N, 22°30'W, alt. 30 m, on siliceous stone manured by snowy owl on gravelly hill, together with *Polysporina simplex*, *Rhizocarpon intermediellum* and *Xanthoria elegans*, 04.05.1949, leg. KH; Kap Eiler Rasmussen, 82°35'N, 20°30'W, alt. 10 m, on basaltic stone on gravelly coast plain, together with *Sporastatia testudinea*, 09.05.1949, leg. KH; Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on stone on stony plain, together with *Polysporina simplex*, 23.05.1949, leg. JT.
- LECIDELLA WULFENII (Hepp) Körb. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on plant remains, 13.05.1949, leg. KH.
- LEPTOGIUM LICHENOIDES (L.) Zahlbr. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 150 m, among mosses on sandy soil on slope, 13.05.1949, leg. KH.
- MEGASPORA VERRUCOSA (Ach.) Hafellner & V. Wirth – Slebsager Elv, 82°00'N, 25°30'W, alt. 20 m, on soil, together with *Catapyrenium* sp., 19.05.1949, leg. KH; Graptolit Elv, 82°14'N, 24°00'W, alt. 120 m, on plant remains, 01.05.1949, leg. KH.
- MELANELIA STYGIA (L.) Essl. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on siliceous stone in stony fell-field, 14.05.1949, leg. KH; Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on siliceous stone on stony plain, together with *Rhizocarpon superficiale*, 23.05.1949, leg. JT.
- \* MELANOHALEA ELEGANTULA (Zahlbr.) O. Blanko et al. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on boulder on stony plain, 13.05.1949, leg. KH.
- \* PARMELIA OMPHALODES (L.) Ach. – Saxifragadal, 81°51'N, 31°15'W, alt. 10 m, on stone in stony fell-field, 07.06.1949, leg. KH.
- PARMELIA SKULTII Hale – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on mosses and plant remains at river-bed, together with *Buellia geophila*, *Cladonia pocillum* and *Flavocetraria nivalis*, 12.05.1949, leg. KH. – In Greenland *P. skultii* has been found growing on soil, but in other areas the species occurs on bare rocks (Thell & Moberg, 2011).
- PELTIGERA LEUCOPHLEBIA (Nyl.) Gyeln. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, among mosses on soil, 13.05.1949, leg. KH.
- PELTIGERA RUFESCENS (Weiss) Humb. – Neergård Elv, 82°00'N, 26°00'W, alt. 50 m, on soil on stony terrace, 19.05.1949, leg. KH.
- PERTUSARIA CORIACEA (Ach.) Th. Fr. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on mosses, 12.05.1949, leg. KH.
- PHAEOPHYSCIA SCIASTRA (Ach.) Moberg – Kap Eiler Rasmussen, 82°35'N, 20°30'W, alt. 5 m, on manured rock, together with *Xanthoria candelaria*, 09.05.1949, leg. KH.
- PHAEORRHIZA NIMBOSA (Fr.) H. Mayrhofer & Poelt – Graptolit Elv, 82°14'N, 24°00'W, alt. 100 m, on mineral soil on stony slope, 01.05.1949, leg. KH.
- PHYSICIA CAESIA (Hoffm.) Fűrnr. – Koralkysten, 82°10'N, 29°00'W, alt. 20 m, on manured rock, together with *Xanthoria elegans*, 25.04.1949, leg. KH.
- PHYSCONIA MUSCIGENA (Ach.) Poelt – Prinsesse Dagmar Ø, 81°42'N, 18°00'W, on soil, 20.05.1952, leg. EK; Krognæs, 81°55'N, 29°30'W, alt. 75 m, on soil at snow-patch, 27.10.1948, leg. KH; Koralkysten, 82°10'N, 29°00'W, alt. 20 m, on soil on gravelly coast plain, 25.04.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'N, alt. 50 m, on soil on talus slope, 07.09.1948 & alt. 460 m, on soil in fell-field, 08.07.1949, leg. KH; Kap Vårbrud, 82°18'N, 22°30'W, alt. 30 m, on plant remains, together with *Vulpicida tilesii*, 04.05.1949 & alt. 10 m, on soil, 07.06.1949, leg. KH; Herlufsholm Strand, 82°40'N,

- 21°30'W, alt. 20 m, on soil in depression, 12.05.1949 & alt. 75 m, on soil on stony plain, 13.05.1949 & alt. 150 m, on sandy soil on slope, 13.05.1949, leg. KH.
- PLACIDIUM LACHNEUM (Ach.) de Lesd. – Falkefjeld, 82°11'N, 28°00'W, alt. 130 m, on soil at the base of bird rock, 26.04.1949, leg. KH.
- PLACYNTHIUM ASPERELLUM (Ach.) Trevis – Aftenstjernesø, 82°17'N, 37°30'W, on rock composed of sandstone, together with *Rhizocarpon geminatum*, 22.03.1949, leg. JT.
- PLEOPSIDIUM CHLOROPHANUM (Wahlenb.) Zopf – Astrup Fjord, c. 81°55'N, 29°30'W, on rock, 25.06.1949, leg. BF; Neergård Elv, c. 82°00'N, 26°00'W, on rock, 01.03.1949, leg. EK; Blomsterstranden, 82°01'N, 30°45'W, on rock composed of sandstone, 05.06.1949, leg. KH.
- POLYSPORINA SIMPLEX (Davies) Vezda – Kap Vårbrud, 82°18'N, 22°30'W, alt. 30 m, on siliceous stone manured by snowy owl, 04.05.1949, leg. KH; Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on stone on stony plain, 23.05.1949, leg. JT.
- PSEUDEPHEBE MINUSCULA (Nyl. ex Arnold) Brodo & D. Hawksw. – Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 1000 m, on siliceous stone in fell-field, 26.06.1949, leg. BF; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on stones in fell-fields, 12.05., 13.05. & 14.05.1949, leg. KH; Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on siliceous stone on plain, 23.05.1949, leg. JT.
- PSORA DECIPIENS (Hedw.) Hoffm. – Krognæs, 81°55'N, 29°30'W, alt. 100 m, on soil in fell-field, 9.06.1949, leg. PJ; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 150 m, on sandy soil on slope, 13.05.1949, leg. KH.
- PSORA RUBIFORMIS (Ach.) Hook. – Kap Glacier, 81°48'N, 31°45'W, alt. 10 m, on sandy soil, 7.06.1949, leg. KH; Saxifragadal, 81°51'N, 31°15'W, on plant remains, 29.10.1948, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 150 m, on sandy soil on slope, 13.05.1949, leg. KH.
- PSOROMA TENUE Henssen var. BOREALE Henssen – Kap Glacier, 81°48'N, 31°45'W, alt. 1 m, on mosses in meadow rich in mosses, 07.06.1949, leg. KH.
- RHIZOCARPON ATROFLAVESCENS Lynge – Kap Eiler Rasmussen, 82°40'N, 20°30'W, alt. 10 m, on slightly calciferous stone on gravelly coast plain, 09.05.1949, leg. KH.
- RHIZOCARPON DISPORUM (Nägeli ex Hepp) Müll. Arg. – Kap Eiler Rasmussen, 82°40'N, 20°30'W, alt. 15 m, on basaltic stone on gravelly hill, 07.05.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on siliceous stone in stony fell-field, 14.05.1949, leg. KH.
- RHIZOCARPON GEMINATUM Körb. – Krognæs, 81°55'N, 29°30'W, alt. 100 m, on siliceous stone in fell-field, 09.06.1949, leg. PJ; Neergård Elv, 82°00'N, 26°00'W, alt. 50 m, on basaltic stone on stony terrace, 19.05.1949, leg. KH; Aftenstjernesø, 82°17'N, 37°30'W, on rock composed of sandstone, 22.03.1949, leg. JT.
- RHIZOCARPON GEOGRAPHICUM (L.) DC. – Herlufsholm Strand, 82°40'N, 20°30'W, alt. 75 m, on siliceous stone in stony fell-field, together with *Rhizocarpon disporum*, 12.05 & 14.05.1949, leg. KH.
- \* RHIZOCARPON GRANDE (Flörke) Arnold – Herlufsholm Strand, 82°40'N, 20°30'W, alt. 75 m, on siliceous stone in stony fell-field, 14.05.1949, leg. KH.
- RHIZOCARPON INTERMEDIELLUM Räsänen – Kap Vårbrud, 82°18'N, 22°30'W, alt. 30 m, on siliceous stone manured by snowy owl on gravelly hill, 4.05.1949, leg. KH.
- RHIZOCARPON PUSILLUM Runemark – Koralkysten, 82°10'N, 29°00'W, alt. 20 m, on *Sporastatia testudinea* on basaltic stone on gravelly coast plain, together with *Xanthoria elegans*, 25.04.1949
- RHIZOCARPON SUPERFICIALE (Schaer.) Vain. – Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on siliceous stone on stony plain, 23.05.1949, leg. JT.
- RHIZOPLACA MELANOPHTHALMA (DC.) Leuckert & Poelt – Saxifragadal, 81°51'N, 31°15'W, alt. 15 m, on stone in stony fell-field, 07.06.1949, leg. KH; Krognæs, 81°55'N, 29°30'W, alt. 100 m, on stone in fell-field, 09.06.1949 & alt. 10 m, on glaciated basaltic rock, 27.10.1948, leg. KH; Herlufsholm Strand, 82°40'N, 20°30'W, alt. 75 m, on manured boulder on stony plain, 13.05.1949, leg. KH.
- \* RINODINA ARCHAEA (Ach.) Arnold – Jewell Fjord, 83°03'N, 43°30'W, on soil rich in humus, 15.04.1950, leg. KER. – *R. archaea* has a low substrate specificity, as it grows on both soil, plant remains, mosses, bark and old wood (Thomson, 1997).
- RINODINA ROSCIDA (Sommerf.) Arnold – Neergård Elv, c. 82°00'N, 26°00'W, on plant remains, 01.03.1949, leg. EK.

- RINODINA TURFACEA (Wahlenb.) Körb. – Blomsterstranden, 82°04'N, 30°15'W, alt. 25 m, on plant remains in stony fell-field, 20.05.1949, leg. KH.
- SOLORINA BISPORa Nyl. – Krognæs, 81°55'N, 29°30'W, on soil, 09.06.1949, leg. PJ.
- SPORASTATIA TESTUDINEA (Ach.) A. Massal. – Koralkysten, 82°10'N, 29°00'W, alt. 20 m, on basaltic stone on stony plain, 25.04.1949, leg. KH; Kap Eiler Rasmussen, 82°40'N, 20°30'W, alt. 10 m, on basaltic stone on gravelly coast plain, 09.05.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on stone, 14.05.1949, leg. KH; Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on basaltic stone on stony plain, 23.05.1949, leg. JT.
- \* STAUROTHELE FUSCOCUPREA (Nyl.) Zschacke – Falkefeld, 82°11'N, 28°00'W, alt. 130 m, on basaltic rock manured by birds, 26.04.1949, leg. KH.
- STEREOCAULON BOTRYOSUM Ach. – Saxifragadal, 81°51'N, 31°15'W, on rock, 29.10.1948, leg. KH.
- STEREOCAULON GLAREOSUM (Savicz) H. Magn. – Kap Glacier, 81°48'N, 31°45'W, alt. 1 m, on soil in meadow, 7.6.1949, leg. KH; Blomsterstranden, 82°04'N, 30°15'W, alt. 25 m, 20.05.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 700 m, on soil in *Cassiope tetragona* heath on slope, 17.6.1949, leg. BF & alt. 460 m, on soil in stone field, 08.07.1949, leg. KH; Kap Eiler Rasmussen, 82°40'N, 20°30'W, alt. 15 m, on gravelly soil, 07.05.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 20 m, on soil in depression in the ground and alt. 75 m, on soil at river bed, 12.05.1949 & alt. 75 m, on soil in stone field, 14.05.1949, leg. KH.
- THAMNOLIA VERMICULARIS (Sw.) Schaer. var. SUBULIFORMIS (Ehrh.) Schaer. – Prinsesse Dagmar Ø, 81°42'N, 18°00'W, on soil, 20.05.1952, leg. EK; Astrup Fjord, 81°57'N, 30°40'W, alt. 100 m, on soil, 09.06.1949, leg. PJ; Graptolit Elv, 82°14'N, 24°00'W, alt. 120 m, on soil on gravelly slope, together with *Dryas* sp., 1.05.1949, leg. KH; Kap Eiler Rasmussen, 82°40'N, 20°30'W, alt. 5 m, on mosses on gravelly coast plain, 09.05.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil in stony fell-field and on soil at river bed, 12.05 & 14.05.1949 & alt. 20 m, on soil in depression in the ground, 12.05.1949, leg. KH; Head of Hellefiskefjord, 82°45'N, 23°00'W, alt. 250 m, on soil, 28.5.1949, leg. JT; G. B. Schley Fjord, 82°52'N, 24°30'W, alt. 2 m, on soil in river delta, 23.05.1949, leg. JT.
- TONINIA ARCTICA Timdal – Astrup Fjord, 81°57'N, 30°40'W, alt. 100 m, on soil, 09.06.1949, leg. PJ.
- TONINIA SEDIFOLIA (Scop.) Timdal – Neergård Elv, 82°00'N, 26°00'W, alt. 50 m, on mineral soil on stony terrace, 19.05.1949, leg. KH. – Like *T. arctica*, *T. sedifolia* is always associated with cyanophilic lichens (Timdal, 1991). Both species prefer neutral to alkaline soil.
- UMBILICARIA DECUSSATA (Vill.) Zahlbr. – Astrup Fjord, 81°57'N, 30°40'W, on rock on plateau, 25.06.1949, leg. BF; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on boulder on stony plain, 13.05.1949.
- UMBILICARIA KRASCHENINNIKOVII (Saviz) Zahlbr. – Krognæs, 81°55'N, 29°30'W, alt. 10 m, on glaciated basaltic rock, 27.10.1948, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 200 m, on rock, 10.08.1947, leg. KH; Blomsterstranden, 82°01'N, 30°45'W, alt. 100 m, on boulder in stony polygon field, 05.06.1949, leg. KH. – *U. krascheninnikovii* is a characteristic, bipolar lichen with its monophyllous, strongly reticulate thallus and subpedicellate apothecia (Thomson, 1984; Galloway, 2007).
- UMBILICARIA LYNGBE Schol. – Saxifragadal, 81°51'N, 31°15'W, alt. 15 m, on stone in stony fell-field, 29.10.1948 & 07.06.1949, leg. KH; G. B. Schley Fjord, 82°52'N, 24°30'W, on rock, 22.05.1949, leg. JT; Kap Isak Glückstadt, 82°58'N, 23°15'W, alt. 160 m, on boulder on stony plain, 23.05.1949, leg. JT.
- UMBILICARIA PROBOSCIDEA (L.) Schrad. – Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on stone in stony fell-field, 14.05.1949, leg. KH.
- UMBILICARIA VIRGINIS Schaer. – Astrup Fjord, 81°57'N, 30°40'W, alt. 10 m, on glaciated basaltic rock, 27.10.1948, leg. KH; Diabasholme, 82°00'N, 31°00'W, alt. 20 m, on basaltic rock, 06.06.1949, leg. KH; Diabasnæs, 82°03'N, 30°30'W, alt. 10 m, in fissure in basaltic rock, 09.06.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 300 m, on rock, 04.08.1947 & alt. 1050 m, on stone on stony plain, 17.04.1949, leg. BF; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on rock, 13.05.1949, leg. KH.



USNEA SPHACELATA R. Br. – Kap Glacier, 81°48'N, 31°45'W, alt. 100 m, on boulder in fell-field, 07.06.1949, leg. KH; Jørgen Brønlund Fjord, 82°10'N, 31°00'W, alt. 1000 m, on boulder in stone field, 27.06.1949, leg. BF; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on rock at river bed, 12.05.1949, leg. KH.

VULPICIDA TILESII (Ach.) J.-E. Mattsson & M.-J. Lai – Kap Vårbrud, 82°18'N, 22°30'W, alt. 30 m, on soil on gravelly hill manured by snowy owl, 04.05.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on soil at river bed, 12.05.1949, leg. KH. – *V. tilesii* is a very characteristic species with its intensely bright yellow to orange colour. It prefers exposed, periodically wet, alkaline soil (Mattsson, 1993). The first Greenland find of the species was made by P. Mølgaard, who collected it at Kim Fjelde, eastern Peary Land (Hansen, 1981).

XANTHORIA CANDELARIA (L.) Th. Fr. – Kap Eiler Rasmussen, 82°40'N, 20°30'W, alt. 5 m, on manured rock, 09.05.1949, leg. KH; Herlufsholm Strand, 82°40'N, 21°30'W, alt. 75 m, on boulder on coastal plain, 13.05.1949, leg. KH.

XANTHORIA ELEGANS (Link) Th. Fr. – Astrup Fjord, 81°57'N, 30°40'W, alt. 10 m, on glaciated basaltic rock, 27.10.1948, leg. KH & alt. 100 m, on rock, 09.06.1949, leg. PJ; Diabasnæs, 82°03'N, 30°30'W, alt. 10 m, in crevice in basaltic rock, 09.06.1949, leg. KH; Koralkysten, 82°10'N, 29°00'W, alt. 20 m, on manured boulder on gravelly coast plain, 25.04.1949, leg. KH; Øvre Mid-sommersø, 82°16'N, 37°20'W, alt. 100 m, on stones, 06.04. & 09.04.1949, leg. PJ; Aftenstjernesø, 82°17'N, 37°30'W, on rock at snow-patch, 22.03.1949, leg. PJ; Kap Vårbrud, 82°18'N, 22°30'W, alt. 30 m, on siliceous rock, 04.05.1949, leg. KH; Head of I. P. Koch Fjord, 82°22'N, 39°00'W, alt. 50 m, on siliceous rock on hill, 02.04.1949, leg. PJ; Kap Eiler Rasmussen, 82°40'N, 20°30'W, alt. 15 m, on boulder on gravelly hill, 07.05.1949, leg. KH.

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